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Frühjahr 2015

ISSN 1015-0498

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Proceedings of the Seventh Conference on Syntax, Phonology and Language Analysis - SinFonIJA VII

Herausgegeben
von
Remus Gergel und Andreas Blümel

Frühjahr 2015

Grazer Linguistische Studien (GLS) 83 (Frühjahr 2015)

Grazer Linguistische Studien 83 (Frühjahr 2015); S. 27–46

Utterance events and indirect speech

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Abstract. The present paper presents a unified analysis of free and embedded indirect speech, with a specific focus on German. First we need a context-based analysis of indexicals (rigid/shiftable) which can capture their orientation in uses in indirect speech. The analysis includes a treatment of the German reportative subjunctive as a shiftable indexical tense. Indirect speech in embedded clauses of the type Peter said that S forces us to extend this context-based analysis of indexicals by an adequate link to the matrix clause. I assume that the event introduced by the matrix verb ('say', 'think' etc.) provides the context parameter for the embedded clause. The resulting analysis makes correct predictions for a wide range of phenomena such as quantification over embedded speech, embedding under passive clauses and indirect speech in nominalizations.

Keywords. Reported speech, tense in embedded contexts, German reportative subjunctive, quantification, shiftable and rigid indexicals

1. Indirect speech[1]

Utterances in indirect speech constitute a special case of recursion in natural language. The speaker's utterance reports on an occasion of someone talking or thinking that itself sets the context for another utterance, such as in (1).

(1) *Tom said to Paul that he'd finish the paper by tomorrow.*

Whenever someone A utters (1) we face two utterance contexts, the one where A is talking, and the one where Tom talks to Paul. We will call the context of speaker A the *external* utterance context whereas Tom's context will be called the *internal* utterance context (because it is often part of a longer story told). Indexicals in indirect speech can refer to all aspects of the internal utterance context, as the following examples show.

(2) *Tom said to Paul that Santa Claus was in town.* (location)
(3) *Tom said to Paul that thank heavens, he was in good health.* (speaker emotive)
(4) *Tom said to Paul that frankly, he didn't like Christmas.* (speech act modifier)

[1] I would like to thank the audience of SinFonIJA 7, Graz, the participants of my class Indirect Speech, Göttingen in summer 2014 and Kjell Johan Sæbø who helped me to clarify and streamline the present analysis.

(5) *Every student called and said that, thank heavens, he was home by now.*
(quantification over different speakers' attitudes)

We find indexicals that refer to time (ex. 1), location (2), speaker (3) and addressee (4, Banfield 1982, Mittwoch 1977 for impact of addressee). In other languages, the choice of context-related expressions can be even richer (e.g., German *wohl, ja* as comment on the speaker-addressee relation). (5) illustrates that quantifiers can take scope over indirect speech.

Indirect speech can be embedded under a matrix clause, such as in (1) – (4), but can also occur as *free indirect speech.* This mode, also called *free indirect discourse,* can include speech and thought reports. Some languages, like German, can use a special mood to indicate indirect speech, and Section 3 takes a closer look at the German reportative subjunctive, aiming at a unified analysis in free and embedded indirect speech. Section 2 lays the basis by providing an analysis of shiftable indexicals in indirect speech. When we look at indirect speech, embedded under verbs of saying and thinking, we have to spell out how the matrix verb provides the internal context against which the indexicals in indirect speech are evaluated. I propose that the *event* introduced by the matrix verb (*'say', 'think'* etc.) provides the *context* parameter for the embedded clause. The resulting analysis makes correct predictions for a wide range of cases, such as quantification over embedded speech, embedding under passive clauses and indirect speech in nominalizations. These will be reviewed in Sections 4 and 5. In order to define the roadmap, I start with a brief survey of existing analyses of embedded and free indirect speech.

A first strand of research investigates tenses in embedded speech, mainly on basis of English (Abusch 1997, von Stechow 1995, Ogihara 1995, Ogihara and Sharvit 2011). Authors assume that the event time of the utterance verb (*'say'* in (1)) serves as the utterance time for tense in the embedded clause. The two time parameters are identified by binding. In exceptional cases in English, tenses in embedded clauses receive a non-standard interpretation (fake past, double access readings). Other languages show a more systematic use of tenses in embedded contexts (see Hatav 2012, Ogihara and Sharvit 2012 on Hebrew). While the resulting systems can successfully capture the temporal relations between matrix and embedded clause, they fail to capture other kinds of context dependent expressions such as those in (2) – (4). To answer this shortcoming, various types of extensions have been proposed.

Kaplan (1977, 1989:554) assumed that verba dicendi, like *say* in (1), denote relations between the speaker and the character of the sentence uttered. We will follow this basic proposal which, however left several issues open. First, it was not discussed in detail how the literal utterance should be reconstructed from the wording of the utterance in indirect speech, and second, he didn't offer a compositional analysis of quantification over indirect speech such as (5).

Other authors generalize the analysis of embedded tenses as bound tenses and assume that all context dependent words in indirect speech are syntactically linked to the corresponding arguments of the matrix clause verb. The most prominent matrix clause argument is the subject (i.e. subject of 'say', 'think', 'claim' etc.) which

provides the speaker of the internal context. Sharvit (2008) elaborates this strategy and presents an analysis of embedded speech that can host speaker oriented and temporally context-oriented expressions in indirect speech. One drawback of this strategy is that it rests on syntactic stipulations that are motivated solely by semantics. While the speaker is expressed overtly as the subject, other context parameters such as addressee or location are not. We have to stipulate that the addressee is always tacitly represented at LF, in order to capture addressee oriented expressions. The same holds for local expressions.

(6) *Tom said (to Bill) that frankly, he had enough.*
(7) *Tom said (in Boston) that Santa Claus was in town.*

Likewise, it remains open how the approach deals with speaker oriented expressions under passive matrix clauses, under impersonal passives and in nominalizations.

(8) Bill was told (by some speaker) that luckily, the strike was over.
(9) the rumour (voiced by someone) that luckily, the strike was over
(10) Es wurde behauptet (von jemand, zu jemand), dass der
it was claimed (by someone, to someone) that the
Streik gottseidank bald zu Ende sei.
strike thank-god soon ended be

The constituents in brackets must always be present at LF in order to ensure the correct binding of context oriented expressions in indirect speech. There is no independent syntactic evidence for their presence. To the contrary, Sharvit's (2008) assumption that sentences in free indirect discourse are embedded under tacit verbs of saying or thinking is challenged by robust syntactic evidence. Sentences in free indirect discourse can show syntactic patterns that are prohibited in embedded speech. This is surprising in an analysis that stipulates a tacit matrix clause for sentences in free indirect discourse. To summarize, it seems problematic to simulate internal contexts for indirect speech by matrix clauses and their constituents.

Finally, there are context-based approaches to indirect speech, such as Schlenker (2004), Anand and Nevins (2004), Eckardt (2012, 2014) and Sode (2014). In these approaches, authors assume that every utterance is interpreted relative to the context of utterance, and that sentences in indirect speech have access to two such contexts, the external and the internal one (as we saw in example (1)). Internal contexts can be freely reconstructed from earlier discourse or given by matrix clauses. They instantiate all parameters of context oriented expressions in indirect speech, independently of overt material in matrix clauses. This type of analysis faces problems with quantified examples such as (5), or (11) below.

(11) *Every guest claimed that, thank heavens, his room was the quietest.*

Example (11) quantifies over utterances and the speaker oriented expression *"thank heavens"* co-varies with the speakers. Every guest expresses his own individual relief about the content of his individual assertion. All existing theories leave it open how the matrix clause quantifier *every* can bind utterance contexts. The example is all the more challenging as there is a long tradition to keep contexts outside the domain of

quantification in general (Kaplan 1977). Examples like (11) seem to lend support to the earlier analyses that locate context parameters at LF.

The present paper integrates a context-based analysis of indirect speech with the LF links evidenced in embedded speech. I assume that utterance events and utterance contexts are one and the same thing, and we can hence use the event argument of the matrix verb (*'say'*, *'think'*, *'claim'*, etc.) as the utterance context for the embedded clause. This analysis makes all aspects of context available for sentences in indirect speech, and at the same time offers a well-defined semantic link between matrix clause and embedded clause.

The paper is organized as follows. Section 2 contains an analysis of rigid and shiftable indexicals that allows us to treat reference to external and internal contexts. Section 3 presents a treatment of the reportative subjunctive in German. I propose that the reportative subjunctive is a paradigm of shiftable tenses/aspects, to be used in speech reports. Section 4 introduces the identification of events (of saying / thinking) and contexts (where someone talks, loudly or silently). We will discuss various examples that illustrate the explanatory adequacy of this shortcut. Section 5 lists further predictions of the analysis as well as ancilliary questions that arise in the new paradigm of indirect speech. Section 6 summarizes the main results of the paper.

2. A framework for shifting and rigid indexicals

The meaning of indexical expressions depends on the utterance context. For instance, the pronoun *I* refers to whoever is the speaker in the utterance context. Indexicals like *I* always depend on the external context. Hence, *I* in (12) refers to Tom, not to Bill.

(12) *Tom: Bill said that I was funny.*

Beside pronouns, there is a second class of context dependent words. Like pronouns, their meaning depends on the utterance context, but unlike pronouns, their meaning can be reoriented to the internal context in indirect speech. Examples in English are emotives such as *thank heavens*, temporals like *tomorrow* or local expressions such as *in town*. In example (12), *thank heavens* reports Bill's relief and *in town* refers to the home town of Bill.

(13) *Tom: Bill called last week. He said that thank heavens, Santa Claus was in town.*

The first kind of indexicals are also called *rigid* indexicals, whereas the latter are called *shiftable* indexicals. Rigid indexicals were considered the typical case in Kaplan's seminal work on context dependence, but when we want to understand the semantics of indirect speech, we have to deal with both forms of indexicality. The present section offers a formal treatment of rigid and shiftable indexicals.

Following Kaplan (1977), we assume that our ontology contains *contexts* as a special sort of entity. D_c refers to the domain of contexts.

Domain D_c = the domain of contexts

Contexts minimally define a speaker, addressee, world, time and place. These can be accessed by functions that map contexts to entities:

$D_c \rightarrow D_e$:	*now*(c)	=	time of c
	here(c)	=	place of c
	sp(c)	=	speaker in c
	ad(c)	=	addressee in c
	world(c)	=	world in which c takes place

The ontological nature of contexts is a matter of debate. While Kaplan talked about contexts mostly as if they were "like (small) worlds", Zimmermann (2011) suggests that contexts can be construed as pairs of worlds and times (and perhaps place). The present paper explores yet another link between contexts and other ontological domains, proposing that the domains of contexts and events are very similar or even overlap; a view that was foreshadowed in Schlenker (2010:fn 3).

In order to capture shiftable and rigid indexicals, I assume that there are two sorts of variables as part of the object language that range over D_c:

small letter variables v_c, v_c', ...
capital letter variables V_c, V_c', ...

Their division of labour will make it possible to predict the semantic orientation of different kinds of indexicals. We will assume that all *shiftable* reference to context uses the small letter sort of variable, whereas rigid indexicals are analyzed with capital letter variables. For instance, the pronoun *I* denotes the speaker of the external context, which can be captured as $sp(V_c)$. We will see presently how the variable V_c is always instantiated by the current external context. A shiftable indexical like *thank heavens, S* can be captured as '$sp(v_c)$ relieved that [[S]]'.

Shiftable indexicals show their special behaviour in embedded indirect speech as well as in free indirect speech, and the present account covers both modes. While the link between embedding clause and indirect speech will be treated in Section 4, the following definitions spell out the difference between shiftable and rigid indexicals in direct versus free indirect speech. This distinction will serve as our first testing ground for the account.

All utterances are interpreted relative to contexts. In direct speech, only one context—the external context C—is available. This context C instantiates *all* variables v_c, V_c.

(14) $[[\ \Phi(v_c,V_c)\ ]]^C$ = the interpretation of Φ under a variable assignment that maps both v_c to C and V_c to C

Utterances in free indirect speech are interpreted relative to two contexts, the internal one c and the external one C: <C,c>. All capital letter variables V_c are mapped to C whereas all small letter variables v_c are instantiated with internal c. As a result, all rigid indexicals stay oriented to the external context whereas the shiftable indexicals re-orient to the internal context.

(15) $[[\ v_c\ ]]^{<C,c>} = c$ $\qquad$ $[[\ V_c\ ]]^{<C,c>} = C$

In order to see the effect of this, let us look at an instance of free indirect speech in English, and its semantic analysis in the present framework.

(16) *Peter looked at me and sighed. Alas, I lost !*

The intended reading is the one where Peter thinks that the addressee lost, and voices disappointment about it. The meaning of the second sentence (16) is composed in the following steps. These are independent of the context(s) at stake (as reflected by the bare interpretation [[.]] brackets). Contexts will come in later.

'Alas, I lost'

a. [[*lose-*]] = $\lambda x \lambda e[\ \text{Lose}(x,e,w)\ ]$

b. [[*I*]] = $sp(V_c)$

c. [[*I lose-*]]) = $\lambda e[\ \text{Lose}(sp(V_c),e,w)\ ]$

d. [[PAST [*I lose-*]]]
= $\exists e[\ \tau(e) \circ R \wedge R<now(V_c) \wedge \text{Lost}(sp(V_c),e,w)\ ]$

e. [[*Alas*]] = $\lambda p.\ \lambda w.\text{Regret}(sp(v_c),\ p,\ w)$
(counts as non-at-issue)

f. [[(16)]] =
assertion:
$\lambda w.\exists e[\ \tau(e) \circ R \wedge R<now(V_c) \wedge \text{Lose}(sp(V_c),e,w)\ ]$
aside: $\lambda w.\text{Regret}(sp(v_c),\ Q,\ w)$

where $Q := \lambda w.\exists e[\ \tau(e) \circ R \wedge R<now(V_c) \wedge \text{Lose}(sp(V_c),e,w)\ ]$

These semantic values contain open parameters V_c, v_c which need to be instantiated by a variable assignment. If the sentence is interpreted as a direct utterance of the external speaker, then all open variables are instantiated by that context C. This results in the following denotation.

[[(16)]] ^{C} =
assertion:
$\lambda w.\exists e[\ \tau(e) \circ R \wedge R<now(C) \wedge \text{Lose}(sp(C),e,w)\ ]$
aside: $\lambda w.\text{Regret}(sp(C),\ Q,\ w)$
'There is an eventuality before the external utterance situation in which the external speaker loses. The external speaker regrets this.'

If the sentence, however, is read as an utterance in free indirect speech where Peter is thinking, then the reader interprets the sentence relative to two contexts <C,c>. C is the external context (as in the other interpretation) and c is the internal context where Peter is thinking. C instantiates V_c whereas c instantiates v_c which results in the following denotation.

[[(16)]] $^{<C,c>}$ =
content:
$\lambda w.\exists e[\ \tau(e) \circ R \wedge R<now(C) \wedge \text{Lose}(sp(C),e,w)\ ]$
aside: $\lambda w.\text{Regret}(sp(c),\ Q,\ w)$
'There is an eventuality before the external utterance situation in which the external speaker loses. Peter regrets this.'

The present paper leaves it open how this is attributed as a thought to Peter, see Eckardt (2014). The difference between direct and free indirect utterance in this example is the following: In $[[\ (16)\ ]]^{<C,c>}$, the utterance comments that **Peter** regrets. In the direct utterance interpretation $[[\ (16)\ ]]^{C}$, the utterance comments that the **external speaker** regrets. The rigid indexical *I* refers to the external speaker *sp*(C) in either interpretation.

The analysis can successfully capture the interpretation of rigid and shiftable indexicals in direct and free indirect speech. It is a variant of the analysis used in Eckardt (2012, 2014) and a similar proposal in Schlenker (2004). The present setup, however, is specifically designed to dovetail well with embedded indirect speech. The distinction between V_c and v_c variables for context not only serves a purpose in free indirect speech. It will also be crucial in our analysis of embedded indirect speech and helps to link matrix clause parameters to embedded utterances, as we will see in Section 4.

3. German reportative subjunctive as shifted indexical

3.1. The data

The present section takes a closer look at a particular case of shifting indexicals: the German reportative subjunctive mood (RS). It is usually identified by its Konjunktiv verb form, but we are more interested in the semantic contribution. We will see that the German reportative subjunctive mood is a semantic form in its own right which introduces tense and aspect information in indirect speech. I propose that the semantic contribution can be analysed as shiftable indexical tense/aspect. To round out the data, we take a brief look at the manifold morphological realizations of the reportative subjunctive, and its delineations to other uses of the subjunctive in German.

The following pair illustrates the use of German subjunctive in an indirect speech version (17.b) of direct speech (17.a).

(17) a.	Petra	sagte (e_1):	"Hans	liest		ein	Buch (e_2)."
	Petra	said	Hans	reads.IND		a	book
	Petra said: "Hans is reading a book"						
b.	Petra	sagte (e_1),	dass	Hans	ein	Buch	lese (e_2).
	Petra	said	that	Hans	a	book	read.RS
	'Petra said that Hans was reading a book'						

As indicated, e_1 is the event of reported (internal) speaking, and e_2 the event about which the internal speaker (= Petra) reports. The form of the verb chosen in (17.b) is the Konjunktiv 1 of *lesen* ('read'), which is distinct from the indicative forms. (17.b) conveys that e_2 is cotemporal to e_1, that is, the reading of the book takes place while

Petra is speaking. The use of Konjunktiv 1 forms is strictly limited to indirect speech, hence there is no possible interpretation for (18).

(18) *Petra sagte: "Hans lese ein Buch."
Petra said Hans reads.Subj a book

Unembedded sentences in the Konjunktiv 1 must be interpreted as free indirect speech. The reader/hearer must accommodate a suitable utterance situation in which the sentence was uttered (Fabricius-Hansen & Sæbø 2004).

(19) *Hans lese ein Buch.*
Hans read.Subj a book
'(someone uttered that) Hans read a book'. Often, the speaker can be construed from the preceding discourse.

The Konjunktiv paradigm allows to code the following temporal relations between speaking e_1 ('sagte') and reported event e_2 ('lesen', read). $\tau(e)$ is the running time of event e.

Table 1

	relation	examples / forms
anterior	$\tau(e_2) < \tau(e_1)$	*Petra sagte, er habe ein Buch gelesen* 'Petra said he had read a book'
cotemporal	$\tau(e_2)$ o $\tau(e_1)$	*Petra sagte, er lese ein Buch* 'Petra said that he was reading a book'
futurate	$\tau(e_1) < \tau(e_2)$	*Petra sagte, er werde ein Buch lesen.* 'Petra said that he would read a book'
futurate perfect	$\tau(e_2) <$ ref-t $\tau(e_1).<$ ref-t	*Petra sagte, er werde das Buch gelesen haben.* 'Petra said that he would have read the book'
past perfect (dialectal)	$\tau(e_2) <$ ref-t ref-t $< \tau(e_1)$	*Petra sagte, er habe das Buch gelesen gehabt.* 'Petra said that (at that time past) he had read the book (already)'

Table 1 is restricted to morphological Konjunktiv 1 forms. You may object that you have encountered many more Konjunktiv forms in German indirect speech. This is correct, and there is a reason for it. A large number of verb forms in Konjunktiv 1 look exactly like their indicative counterpart, i.e. it is unclear for the hearer whether the speaker intended to realise a reportative subjunctive or the indicative mood. In order to avoid such ambiguities, speakers can choose a corresponding Konjunktiv 2 form of the verb, or even the analytical form build with *würde + Infinitive.* The choice for *lesen.*3rd person sg. ('he reads') is illustrated in (20).

(20) *er lese* (Konj1) – *er läse* (Konj 2) – *er würde lesen* (anal. Konj.)

The forms in (21) illustrate the first person paradigm where Konjunktiv 1 is identical to the indicative, whereas the Konjunktiv 2 and the analytical Konjunktiv form look different.

(21) *ich lese* (Indic. 1st person sg.) = *ich lese* (Konj1)
ich läse (Konj 2), *ich würde lesen* (anal. Konj.)

In order to indicate the intended use of reportative subjunctive, speakers of German will use *ich läse* or *ich würde lesen* instead of the ambiguous form *ich lese.* This free choice of forms makes the morphological facts about the reportative subjunctive hard to disentangle. However, these choices do not add any further semantic entries to the paradigm in table 1. The semantic analysis can therefore restrict attention to these forms. For the purposes of the present paper, I will moreover leave the aspectual distinction (simple — perfective) aside, which leaves us with three temporal relations to be covered: *anterior, cotemporal* and *futurate.*

3.2. The analysis

We adopt the standard architecture of tense and aspect in languages like German, where the sentence root (= untensed part of the clause) denotes a set of events. Aspect features serve to map sets of events to sets of time intervals, coding the perspectival viewpoint that the sentence takes on the reported event. Finally, tense information serves to relate reference time and utterance time of the sentence.

For the purposes of the present paper, I assume a *neutral aspect* which maps sets of eventualities to sets of time intervals. The use of *neutral aspect* is restricted to sentences in the reportative subjunctive (i.e. it must agree with other semantic building blocks as all being part of the reportative subjunctive paradigm). In addition to the common types, I use <τ,t> for sets of times, and <ϵ,t> for sets of eventualities.

(22) $[[\ \textit{neutral}\ ]] = \lambda P_{<\epsilon,t>} \lambda t_{\tau} . \exists e (\ P(e) \wedge \tau(e) = t\ )$

This provides the basis for the three tenses in the reportative subjunctive.

(23) a. $[[\ \textit{cotemporal}\ ]] = \lambda P_{<\tau,t>} . \exists t (\ P(t) \wedge t \circ \textit{now}(v_c)\ )$
b. $[[\ \textit{anterior}\ ]] = \lambda P_{<\tau,t>} . \exists t (\ P(t) \wedge t < \textit{now}(v_c)\ )$
c. $[[\ \textit{futurate}\ ]] = \lambda P_{<\tau,t>} . \exists t (\ P(t) \wedge \textit{now}(v_c) < t\ )$

Each of these three tense forms triggers the presupposition that it is used in indirect speech. We can capture this presupposition elegantly by assuming that the external utterance context V_c and the internal utterance context v_c must differ.

(24) presupposition: $V_c \neq v_c$

This presupposition is valid in all uses of reportative subjunctive in *free* indirect speech, as we saw illustrated in the preceding section. If the sentence is interpreted relative to two different contexts <C,c>, then C instantiates V_c and c instantiates v_c. Hence C≠c is true. In direct speech, both V_c and v_c are instantiated by C, such that C≠C is false and we predict presupposition failure. We will see in section 4 how the presupposition in (24) is satisfied in embedded indirect speech.

In order to illustrate the analysis so far, let me go through an example where the reportative subjunctive is used in free indirect speech, before we turn to embedded cases in section 4.

(25) *(Petra sagte) Hans habe ein Buch gelesen.*

(26) a. [[*S-root*]] = λe[∃x(READ(H, x, e))]

b. [[*neutral* S-root]]
= $\lambda P_{<\epsilon,t>}\lambda t.\exists e(\ P(e) \wedge \tau(e) = t\ )\ (\lambda e[\ \exists x(\ READ(\ H, x, e\ )\ )\ ]$ =
$\lambda t.\exists e(\exists x(\ READ(\ H, x, e\ ) \wedge \tau(e) = t\ )$

c. [[*anterior* (*neutral* S-root)]]
= $\lambda\ P_{<\tau,t>}.\exists t(\ P(t) \wedge t < now(v_c)\ )\ (\lambda t.\exists e(\exists x(\ READ(\ H, x, e\ ) \wedge$
$\tau(e) = t\ ))$
= $\exists t(\exists e(\exists x(\ READ(\ H, x, e\ ) \wedge \tau(e) = t\ )) \wedge t < now(v_c)\ )$

d. 'there is some time t, at which an event e takes place where H reads a book x. t is before the internal context's *now*.'

Presupposition: $V_c \neq v_c$ (the external utterance is not the utterance where the clause *Hans habe ein Buch gelesen* is asserted)

The sentence must hence be evaluated relative to external context C and internal context c. In the given case, c is most plausibly the context where Petra is speaking (at the time of the ongoing storyline). This internal context c defines *now*(c), and (26.c) states that the reading of the book took place before that time. This is intuitively correct.

We can now build on a general mechanism to handle shifting indexicals, and on an elementary semantics for reportative subjunctive in German. Up to now, we have only considered free uses of these (free indirect speech, *erlebte Rede*). The next section discusses indirect speech in embedded contexts. For those interested in German Konjunktiv, the Appendix includes a list of forms that can express anterior, co-temporal and futurate in indirect speech. A detailed discussion of attested forms and meanings can be found in von Roncador (1988).

4. Indirect speech in embedded contexts

We have analyzed shifting indexicals—including the reportative subjunctive—in terms of different kinds of reference to utterance contexts. This analysis can be applied straightforwardly to free indirect speech, but it is still open how the approach covers examples of embedded indirect speech. Some examples are given in (27) – (29).

(27) *Petra sagte, Hans habe gottseidank ein Buch gelesen.*
Petra said Hans have.K1 thank-heavens a book read
'Petra said that, luckily, Hans had read a book'

(28) *Jeder Teilnehmer dachte, er habe <u>leider</u> nicht gewonnen.*
Each participant thought he have.K1 regrettably not won
'Each participant thought that he, regrettably, hadn't won.'

(29) *Jedem* *Besucher* *wurde* *gesagt,* *er* *habe* *heute* *freien*
each visitor.dative was said, he have.K1 today free
Eintritt.
access
'Each visitor was told that he had free access today'

These examples allow for various observations. They confirm that embedded indirect speech can contain speaker oriented items (*gottseidank, leider*) as well as other context-oriented items (*heute*). These refer to the reported utterance contexts. In (27), *gottseidank* reports Petra's relief, in (28) *leider* expresses each individual speaker's regret about their individual content of thought, and in (29) *heute* denotes the individual utterance days per visitor. If the visitors arrived over several days, each of them was told that he had free access on *that particular day.* The passive example in (29) moreover illustrates that reference to the subject of the matrix clause is not the same as reference to the internal utterance context of (27) – (29). Likewise, reference to the reference time of the matrix clause is insufficient as a strategy to analyze (27) – (29). We want to make sure that all shiftable indexicals in the embedded clause are oriented to one coherent utterance context, namely the context established by the matrix clause verb.

The most important observation, however, is that the matrix clause quantifiers in (28) and (29) take scope over the shiftable indexicals *leider* and *today.* The internal contexts co-vary with subject and object referents, and this poses a challenge to a context-based analysis of shiftable indexicals. The formal treatment of context in the spirit of Kaplan (1977) – also used in the analyses Schlenker (2004), Anand and Nevins (2004), Eckardt (2014), Sode (2014)) – ensures that context parameters are not bound by quantifiers at LF. The question is: How can we account for (28)/(29) in a context-based analysis of indexicality?

I propose that clauses in indirect speech are connected to the matrix clause via the *event* introduced by the matrix verb. Fabricius-Hansen and Sæbø (2004) argue that reportative subjunctives require *verba dicendi* or *sentiendi* as their matrix predicate. We will make their observation more specific and assume that the matrix predicate must refer to an *eventuality* that can be construed as an *utterance context.* Contexts and events of saying and thinking have a lot in common. Following Kaplan, contexts define a speaker, addressee, time, world and place. This is mirrored by the unique-participants assumption for events. Every event uniquely defines its participants, which can include *agent, patient, goal, theme, experiencer, source, ...* (see Champollion 2010:Chap.2, Carlson 1984, 1998, Parsons 1990, Landman 2000). The actual choice of thematic relations depends on the type of event. When we are concerned with events of saying, we can assume that they have a speaker (= *agent*), an addressee (= *patient*), a time (the event's running time, as above) and a place. To make the analogy between events and contexts complete, we'll have to assume that events are linked to the world in which they happen (see Cresswell 1985 on the modal properties of events). The parallel is summarized in (30).

(30) utterance event → speaker (=agent), addressee (=patient), time ($\tau(e)$), place, *world*
context → speaker, addressee, time, place, world

The analysis extends to verbs of *thinking* in the sense of 'talking silently to oneself', as in *Tom thought that, sadly, he had missed the bus.* While the addressee in soliloqui is still unclear, evidence suggests that shifting indexicals can be used in thought like in speaking loudly. The borderline between 'think' and 'know' will be inspected later in Section 5.

For the moment, I implement the analogy between (some) events and (some) contexts in the simplest possible way and assume that the two domains have a non-empty intersection, i.e. there are things that are both events and contexts. A more careful implementation could be one where *events* are mapped to *contexts*, but the domains are distinct sets of objects, but at present there is no need to adopt this extra level of complexity.

We can now return to the initial insight: Natural languages allow us to make utterances about utterances. Sentences of the form *Tom said that S* not only relate Tom to a proposition S, but to an utterance meaning. I assume that verbs of saying and thinking take (*shiftable*) *sentence characters* as their argument.[2] These take the utterance event as their context argument, and thus provide the link between matrix clause arguments and shiftable indexicals in the embedded clause. Having set the roadmap for this section, we will spell out the proposal in detail.

4.1. Shiftable sentence characters

The meanings of sentences depend on utterance context parameters. We used two sorts of variables to capture this dependency, V_c for non-shiftable reference to the external utterance context and v_c for shiftable reference to external/internal contexts. In indirect speech, the latter must be re-directed to the local utterance context, introduced by the matrix verb. In order to achieve this, we assume an operation of lambda-abstraction over v_c. This operation is similar to the abstraction over world parameters in intensional functional application (Heim & Kratzer 1998, von Fintel and Heim 2006) and yields a function that maps contexts to sentence meanings.[3]

1. $[[\ S\ ]]^{<C,c>} = \Phi(V_c,v_c)$ (proposition with open parameters, to be instantiated by c,C)

2. Content of indirect speech: $\lambda v_c.\Phi(V_c, v_c)$

[2] See Kaplan (1977) for an analysis of say-verbs with a similar logical type, also discussed in von Stechow and Zimmermann (2005). These authors do not connect contexts to events, though.

[3] The world parameter is left implicit, leaving it open for the moment whether propositions are derived before forming the shiftable character (which would hence be of the form $\lambda vc\lambda w\Phi(v,V,w)$) or only when combining character and matrix predicate.

The function in (2.) will also be called the *shiftable character of S.* The shiftable character will still depend on context C in all rigid indexicals. The shiftable indexicals, in contrast, are bound by lambda abstraction as indicated.

Verbs of saying and thinking take shiftable characters as their argument. They instantiate this argument $\lambda v_c.\Phi(V_c,v_c)$ with their referential event parameter. The verb '*say*' has the lexical entry in (31).

(31) $\lambda P\lambda e\lambda x.$Say(x, e, w, P(e))
"The event **e** of saying *is* the context **c** relative to which the clausal complement P is evaluated."

For the moment, the variable P ranges over shiftable characters. However, indirect speech can contribute the full range of levels of meaning we find for direct speech: at issue content, aside content and presuppositions. Eventually, the meanings of verba dicendi in indirect speech take as their arguments *content* in this comprehensive manner. The present paper doesn't spell out this part of the analysis, but we will assume that P is the entry point for all dimensions of utterance content.

4.2. Quantifying over utterance events

Let us apply these assumptions in a simple case, and see whether the analysis can capture the quantificational dependencies between matrix clause and utterance contexts. I use (28) as a test case, repeated below. The logical type of *think/denken* in the sense of "say to myself" is like *say* in (31). The negation *nicht gewonnen* is replaced by the simpler *verloren* 'lost'.

(32) *Jeder Teilnehmer$_1$ dachte, er$_1$ habe leider verloren.*

a. [[*er$_1$ verlier + neutral + anterior*]]$^{<C,c>}$
= $\lambda w.\exists f\exists e($ Lose(x_1, e, w) $\wedge$ $\tau(e) = t \wedge t <$ *now*(v_c)) =: p

b. [[(*er$_1$ verlier + neutral + anterior*) + *leider*]]$^{<C,c>}$
=
at issue: $\lambda w.\ \exists f\exists e($ Lose(x_1, e, w) $\wedge$ $\tau(e) = t \wedge t <$ *now*(v_c))
comment: $\lambda w.$Regret(*sp*(v_c), *now*(v_c), w, p)

c. Indirect character of (32.b):
at issue: $\lambda v_c.\lambda w.\exists f\exists e($Lose($x_1$, e, w) $\wedge$ $\tau(e) = t \wedge t <$ *now*(v_c))
comment: $\lambda v_c.\lambda w.$Regret(*sp*(v_c), *now*(v_c), w, p)

d. [[*denk-*]]^C = $\lambda P\lambda e_1\lambda x$Think(x, w, e_1, $P(e_1)$)

e. Putting together (32.c) + (32.d):
$\lambda e_1\lambda x$Think(x, w, e_1,
$\lambda w.\ \exists f\exists e($Loose($x_1$, e, w) $\wedge$ $\tau(e) = t \wedge t <$ *now*(v_c)) •
$\lambda w.$Regret(*sp*(e_1), *now*(e_1), w, p))

Next, we submit (32.e) to existential closure over the event argument. The subject argument has been instantiated with x_1 after QR (von Fintel and Heim 2006).

f. $[\exists e_2$ (Think(x_1, w, e_2,
$\lambda w.\ \exists f \exists e$(Loose($x_1$, e, w) $\wedge$ $\tau(e) = t \wedge t <$ *now*(v_c)) •
λw.Regret(*sp*(e_2), *now*(e_2), w, p))]

Finally, we combine (32.f) with the subject DP. This involves lambda-abstraction over the index of the subject (λx_1); the resulting property is combined with the generalized quantifier [[*every participant*]].

g. $\forall x_1$(Participant(x_1) $\longrightarrow$ $\exists e_2$ (Think(x_1, w, e_2,
$\lambda w.\ \exists f \exists e$(Loose($x_1$, e, w) $\wedge$ $\tau(e) = t \wedge t <$ *now*(v_c)) •
λw.Regret(*sp*(e_2), *now*(e_2), w, p))

The resulting meaning can hence be paraphrased as follows:

> "for each participant x_1, there is a thinking (e_2) of the following content: 'x_1 lost before the thinking, and the speaker – i.e. x_1 again – regrets this at the time of thinking.'"

We correctly predict that each person regrets their own failure.[4]

While the computation in (32) shows the steps of the analysis, it may be worth pointing out some specifics. The interaction of event quantifier and other quantifiers in the clause follows the general patterns that have been observed for these cases. The most comprehensive study can be found in Kratzer (2003). The present examples benefit from a few ad hoc assumptions about the suitable order of arguments of the verb, but all these can be replaced by a more principled treatment. Secondly, note that different semantic mechanisms determine the instantiation of different ways to refer to a 'participant' in (32). The pronoun subject *er* in (31) is co-indexed with the subject and undergoes the standard treatment of promonimal reference. The subject of *leider* (Regret), in contrast, is instantiated as "the agent of the utterance event in question". Eventually, this will be the same person as the referent of *er*, but this is a side effect of the overall analysis.

5. Consequences and open questions

The analysis yields adequate results in other cases, some of which are problematic for earlier theories. I list the semantic values for some examples of interest. (33) repeats the earlier passive example in (29).

[4] Technically, (32) requires a verb think to take asserted content α and non-at-issue content β as argument. I opted for an ad-hoc notational solution where these form a tuple $\alpha \bullet \beta$; a more conservative way of combination could be boolean conjunction $\alpha \wedge \beta$. A principled theory of multi-dimensional semantic objects as arguments of verbs would clear up this point. I'd like to thank Daniel Büring and Daniel Gutzmann for extensive discussion of this point.

(33) *Jedem Besucher wurde gesagt, er habe heute freien Eintritt.*
'Each visitor was told that he had free access today.'

$\forall x_1(\ \text{Visitor}_w(x_1) \rightarrow \exists e[\ \tau(e) \subset R \wedge R < \textit{now}(V_c) \wedge$
$\exists y(\ \text{Say}(y,x_1,w,e,Q)\ )\ ]\ )$
with
$Q = \lambda w[\ \exists s(\ \text{Free-Entry}(\ x_1,w,s\ ) \wedge \tau(s) \subset \iota z.\text{Today}(z, \text{now}(e))$
$\wedge\ \tau(e) \circ \text{now}(e)\ )\ ]$

'For each visitor x_1, there is an event where someone said to him Q; Q is the following content: there is a phase s of free entry for x_1, which is included in the day of the utterance e, and overlaps with the speech time now(e).'

Example (33) demonstrates that binding to overt matrix clause DPs is not mandatory to achieve the correct connection between utterances and their content. (33) leaves the speaker implicit, and quantification happens over addressees. The utterance event still allows to access all aspects of the context. We could even have a speaker-oriented expression in the embedded clause, and link it to the speaker—otherwise unknown—via the utterance event. (34) is an example of this type.

(34) *Jedem*	*Besucher*	*wurde*	*gesagt,*	*das*	*Hotel*	*sei*	*leider*
each	visitor.dative	was	said,	the	Hotel	was.K1	regrettably
voll.							
full.							

Each visitor was told that the hotel, regrettably, was full.

$\forall x_1(\ \text{Visitor}_w(x_1) \rightarrow \exists e[\ \tau(e) \subset R \wedge R < \textit{now}(V_c) \wedge$
$\exists y(\ \text{Say}(y,x_1,w,e,Q) \wedge \text{Regret}(y,w,Q)\ )\ ]\ )$
with

Q:
$\lambda w[\ \exists s(\ \text{Free-Entry}(\ x_1,w,s\ ) \wedge \tau(s) \subset \iota z.\text{Today}(z, \text{now}(e))$
$\wedge\ \tau(e) \circ \text{now}(e)\ )\ ]$

The interpretation of quantification likewise yields adequate results for negative quantifiers. These are particularly hard to capture in a purely context-based approach, where reference to internal contexts always necessitates the entailment that an utterance was made—which is exactly what (35) denies.

(35) *Niemand*	*hat*	*behauptet,*	*es*$_2$	*sei*	*einfach.*
Nobody	has	claimed,	it	be.K1	easy

'Nobody claimed that it was easy.'

$\neg\exists x_1(\ \text{Person}(x_1) \wedge \exists e(\ \text{Claim}(\ x_1,\ w,\ e,\ Q\ )\ )$
with
$Q = \lambda w.\exists s(\ \text{Easy}(x_2, w, s) \wedge \tau(s) \circ \text{now}(e)\ )$

'There is no person x_1 and event e such that x_1 claims in e that x_2 is simple in a state s overlapping with their speech time.'

Example (35) shows that the matrix clause in indirect speech can assert the non-existence of utterances as naturally as the existence of utterances. Whereas the parameter for the external utterance context V_c will *always* refer to an existing utterance context, our treatment of embedded indirect speech does not automatically entail internal utterance contexts. This is correct, as (35) demonstrates.

The present analysis is limited to embedded indirect speech where an utterance event – uttering loudly or tacitly, to oneself—takes place. Not covered are true instances of *knowing* and *believing* where no corresponding mental speech activity took place. This echoes a classical insight by Vendler (1957) who observed that even the aspectual properties of *think about* and *think that* (in the sense of 'believe') differ. We will therefore have to assume that embedded beliefs are covered by an alternative analysis that does not make reference to events as contexts. This is even true for corresponding examples in German in Konjunktiv form.

(34) *Tom glaubte, dass das Auto kaputt sei /wäre.*
Tom believed that the car broken was.Subj.
'Tom believed that the car was broken.'

In these examples, the second important semantic contribution of subjunctives takes over, the contribution that the speaker does not want to commit herself to the truth of the proposition. The reportative subjunctive entails more specifically that the proposition is *not* uttered by the present speaker in the present utterance context. I leave it open whether the former is a bleached or enriched version of the latter.[5]

The present analysis may offer a promising test ground for other languages with a systematic distinction between the meaning of tenses in matrix clauses and embedded clauses. According to Hatav (2012), Sharvit and Ogihara (2012), Hebrew past, present and future tenses are evaluated relative to the external context in direct speech, and relative to the internal context in indirect speech. This suggests that, like the reportative subjunctive, they are shiftable indexicals in the sense of the present paper. Unlike the RS, the forms do not give rise to the presupposition that $V_c \neq v_c$, i.e., that the clause is used in indirect speech. Tenses in Hebrew relate the events in the sentence to C or c, depending on their syntactic position and the most plausible interpretation of the overall text.

6. Summary

The present paper proposed a unified analysis of free and embedded indirect speech, taking a special look at the reportative subjunctive in German. In Section 2, I provided an analysis of shiftable indexicals in indirect speech, based on two sorts of variables in the interpretation of indexicals: v_c which can shift value, and V_c which cannot. This predicts the orientation of shiftable indexicals to external or to reported utterance context, whereas the "traditional" rigid indexicals always refer to the external utterance context C. As an application of this framework, I proposed a treatment of the German reportative subjunctive as a shiftable indexical tense.

[5] I thank Kjell Johan Sæbø for drawing my attention to this consequence.

Section 4 treats indirect speech in embedded clauses. I assume that the *event* introduced by the matrix verb (*'say', 'think'* etc.) provides the *context* parameter for the embedded clause. The resulting analysis makes correct predictions for a large range of cases, such as quantification over emebdded speech, embedding under passive clauses and indirect speech in nominalizations.

Appendix 1: Variation in Konjunktiv

Table 2

	relation	**examples / forms**
anterior	$\tau(e_2) < \tau(e_1)$	*Petra sagte, Hans habe ein Buch gelesen* *... Hans hätte ein Buch gelesen* (*Hans würde ein Buch gelesen haben* is morphologically well-formed but receives a counterfactual interpretation, according to speakers' judgement)
cotemporal	$\tau(e_2) \circ \tau(e_1)$	*Petra sagte, Hans lese ein Buch* *... Hans läse ein Buch* *... Hans würde ein Buch lesen*
futurate	$\tau(e_1) < \tau(e_2)$	*Petra sagte, Hans werde ein Buch lesen.* *... Hans lese (morgen) ein Buch.* *... Hans läse (morgen) ein Buch*
futurate perfect	$\tau(e_2) <$ ref-t $\tau(e_1) <$ ref-t	*Petra sagte, Hans werde das Buch gelesen haben.*
past perfect (dialectal)	$\tau(e_2) <$ ref-t ref-t $< \tau(e_1)$	*Petra sagte, Hans hätte das Buch gelesen gehabt.* *... Hans habe das Buch gelesen gehabt.* (southern varieties)

The choice of form to express the reportative subjunctive can depend on matters of style and the need to distinguish the reportative subjunctive from the indicative. A recent assessment of data with native informants (n=20, summer 2014) confirmed that forms are more or less in free variation.

In the paper, the *anterior* was analyzed as a tense form, in spite of its morphological shape (subjunctive of *haben* plus participle). While I have to date no specific arguments to support this decision, the alternative decision—treating it as a present perfect form—would not simplify the overall picture. We would still have to handle two tenses (*futurate* vs. *cotemporal*) and, in addition, stacked aspects (double perfect instead of past perfect) in the Southern varieties. I am open to alternative implementations if these allow for an overall simpler theory.

Appendix 2: Table of symbols

Table 3

symbol	paraphrase	examples
$\lambda x.\phi(x)$	the function which maps x-values on $\phi(x)$	$\lambda x.x^2$ ≈ the function that maps every number x to its square.
$\forall x\phi(x)$	for all x, ϕ holds true	$\forall x(x=x)$ ≈ for all x, it is true that it is identical to itself.
$\exists x\phi(x)$	there is an x such that ϕ holds true	$\exists x(x = \text{Tom})$ ≈ there is someone who is identical to Tom
$\phi \wedge \psi$	ϕ and ψ	$now(v_c) \neq now(V_c) \wedge here(v_c) \neq here(V_c)$ ≈ 'external time ≠ internal time and external place ≠ internal place'
$\phi \vee \psi$	ϕ or ψ (in the sense: "or, perhaps and")	$now(v_c) \neq now(V_c) \vee here(v_c) \neq here(V_c)$ ≈ 'external time ≠ internal time, or external place ≠ internal place (or both)'
$\neg\phi$	not ϕ	¬(Sad(Tom)) ≈ 'It is not the case that Tom is sad'
$\tau(e)$	the time of event *e*	
$X \subset Y$	X is a subset of Y, also for time intervals	{ 1, 2, 3} ⊂ {1, 2, 3, 4, 5, 6}
$t < t'$	time t is earlier than t'	
$t \circ t'$	time t overlaps with t'	
<s,t>	logical type: functions from worlds to {1,0}	logical type of propositions
$a \in X$	a is an element of set X	$2 \in \{2, 4, 6\}$ $4 \in \{ x \mid x \text{ is an even number} \}$
$[[\phi]]^C$	ϕ interpreted under variable assignment *g* that maps V_c and v_c to context *C*	direct speech
$[[\phi]]^{<C,d>}$	ϕ interpreted under variable assignment *g* that maps V_c to C and v_c to *d*.	indirect speech

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83 (Frühjahr 2015)

Remus Gergl, Andreas Blümel (eds.)

Proceedings of the Seventh Conference on Syntax, Phonology and Language Analysis - SinFonIJA VII

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